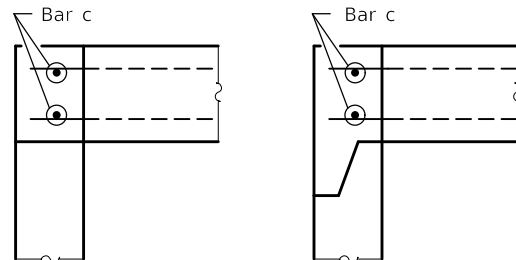
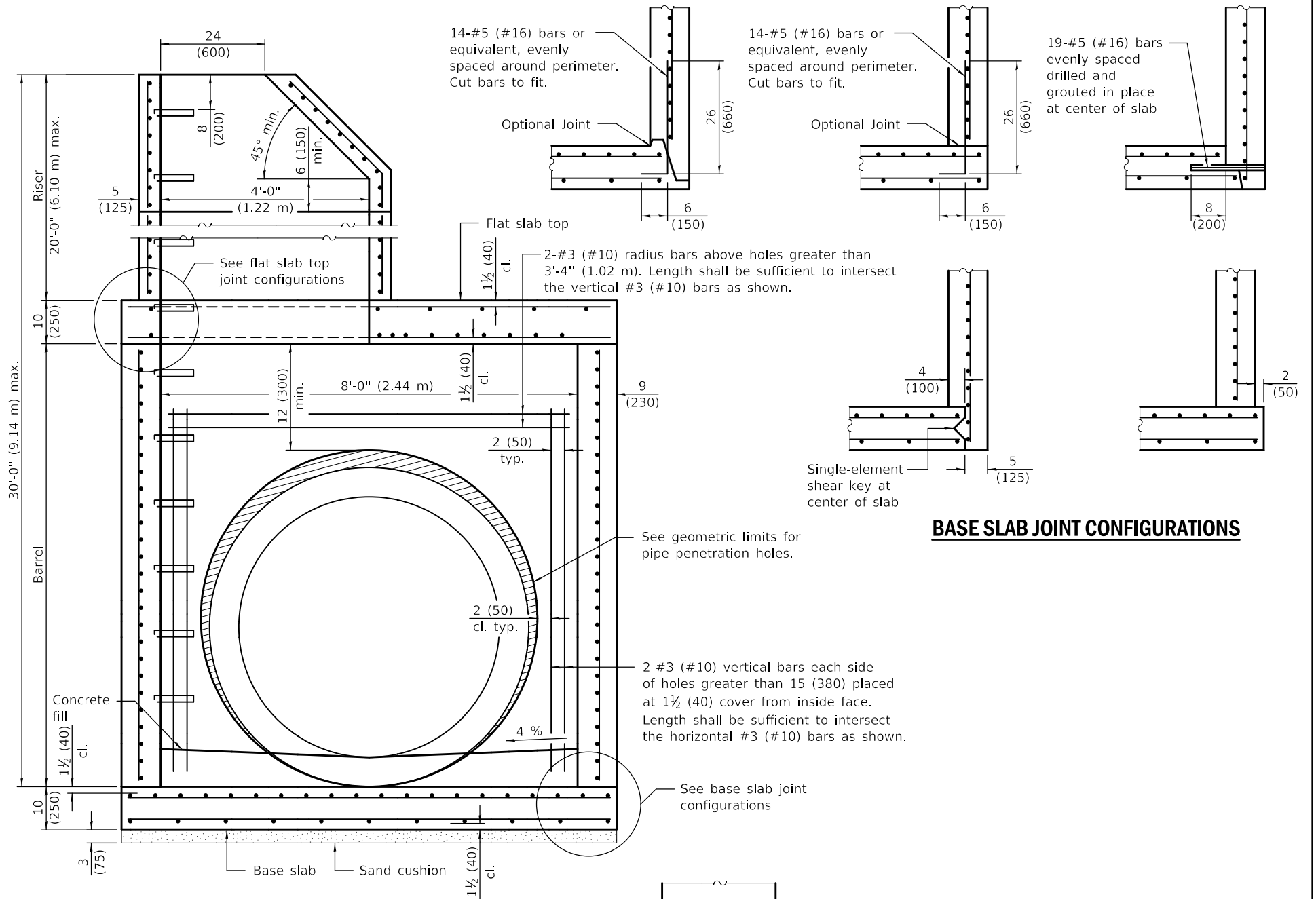


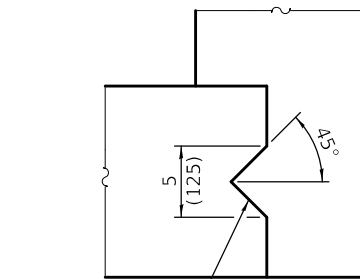
**SECTION PARALLEL TO PIPE**  
(Without conical top riser)



**FLAT SLAB TOP JOINT CONFIGURATIONS**  
(Shown at access hole)



**SECTION PERPENDICULAR TO PIPE**  
(With conical top riser)



**SHEAR KEY GEOMETRY**  
(Reinforcement not shown for clarity)

**BASE SLAB JOINT CONFIGURATIONS**

**GENERAL NOTES**

Pipe holes shall be formed to facilitate proper placement of hole reinforcement.

The manufacturer shall ensure that all precast manhole sections are additionally reinforced where required to resist damage from handling, shipping and installation stresses.

Lifting holes shall be located in the sections as per the manufacturer's recommendations, except as noted.

See Standard 602701 for details of manhole steps.

All dimensions are in inches (millimeters) unless otherwise noted.

**GEOMETRIC LIMITS FOR PIPE PENETRATION HOLES**

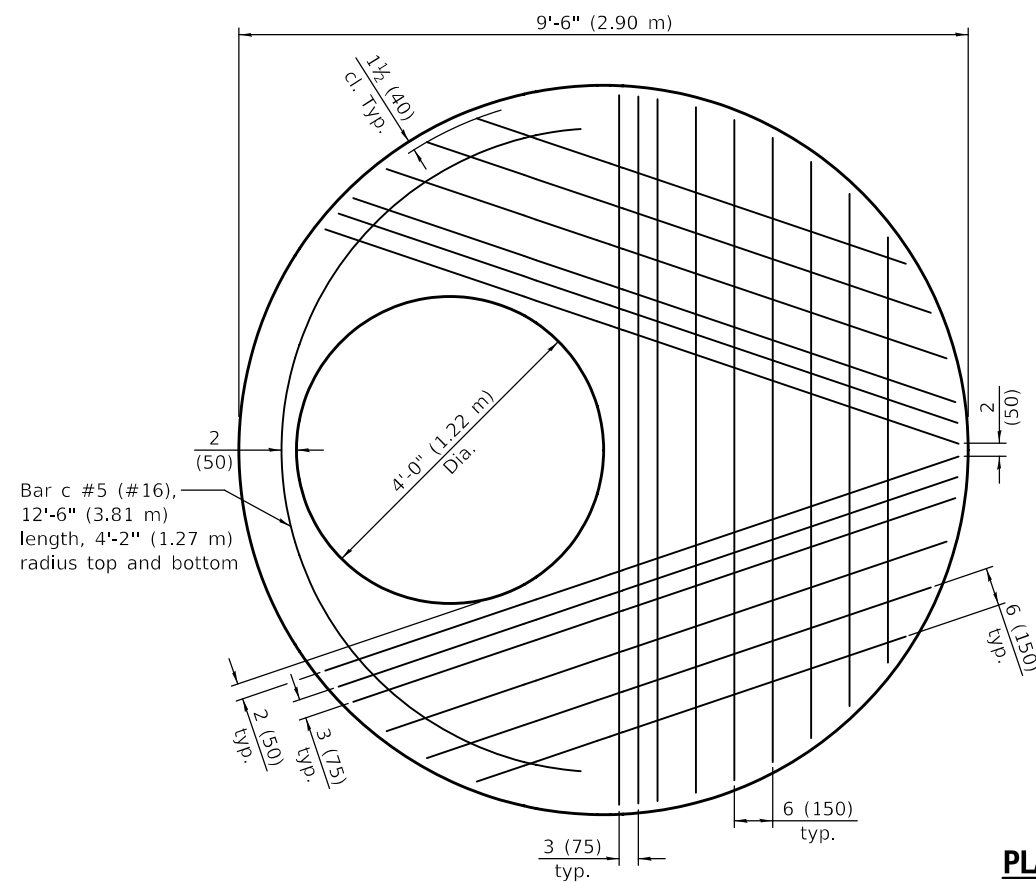
1. A minimum of 12 (300) of monolithic reinforced concrete shall be maintained above pipe penetration holes > 3'-4" (1.02 m).
2. A minimum 12 (300) inside arc length of reinforced concrete shall be maintained between pipe penetration holes > 15 (380).
3. A maximum of 60 percent of the inside perimeter of the reinforced concrete manhole walls may be removed.
4. Horizontal joints that intersect pipe penetration holes > 15 (380) shall have one joint splice for every location around the perimeter of the joint where the inside arc length between pipe penetration holes is < 24 (600). See joint splice detail.
5. The recommended pipe penetration hole is equal to the O.D. of the pipe plus 4 (100).
6. Only pipe penetration holes ≤ 15 (380) are allowed in riser sections.

DATE	REVISIONS
3-1-19	Moved wall reinforcement from inside face to middle.
1-1-19	Expanded / refined reinforcement options. Increased manhole depths.

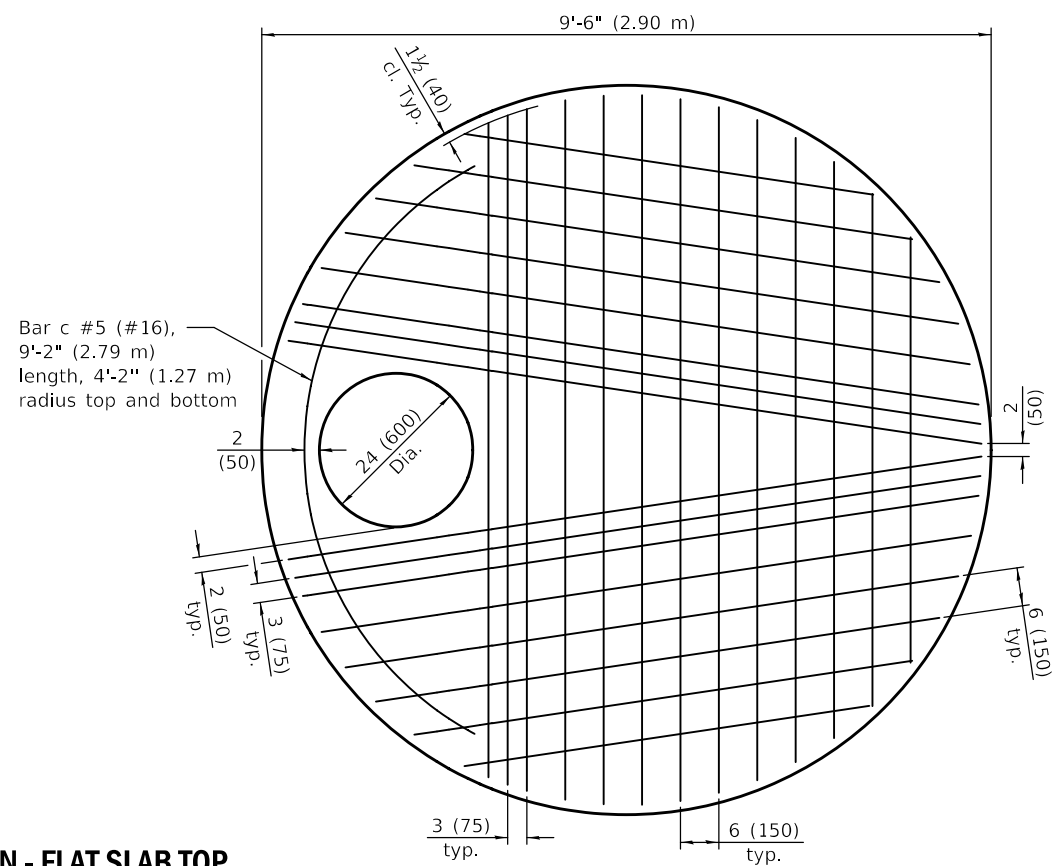
**PRECAST MANHOLE TYPE A**  
**8' (2.44 m) DIAMETER**

(Sheet 1 of 3)

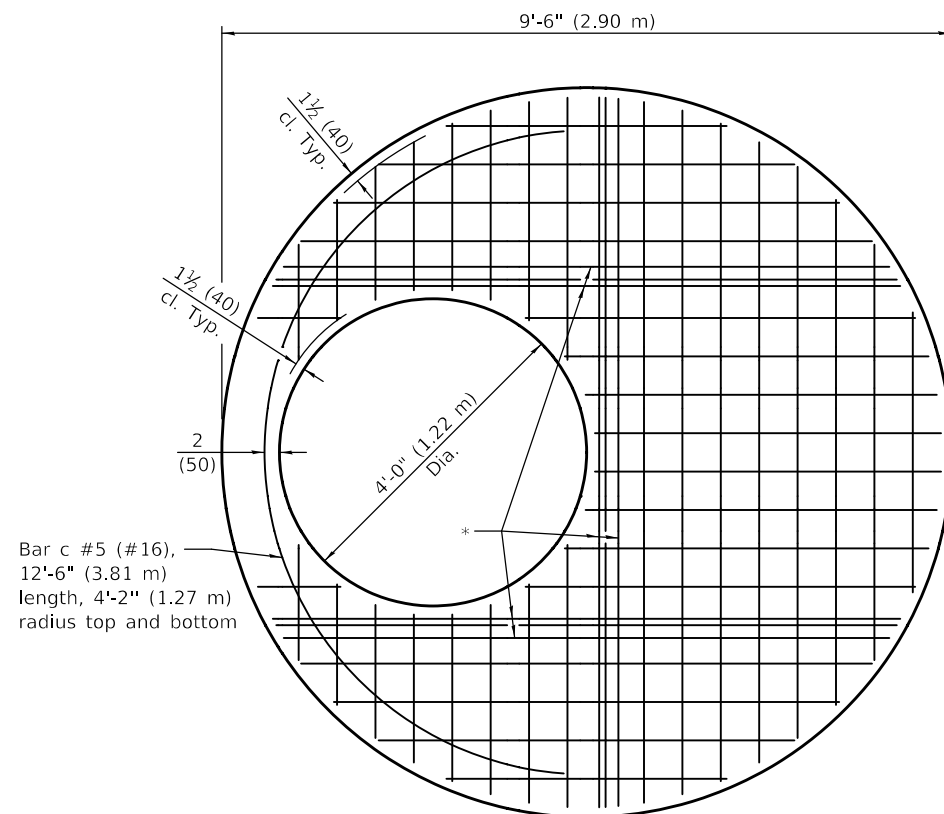
**STANDARD 602416-08**



(Showing layout of bottom reinforcement bars and c bars)

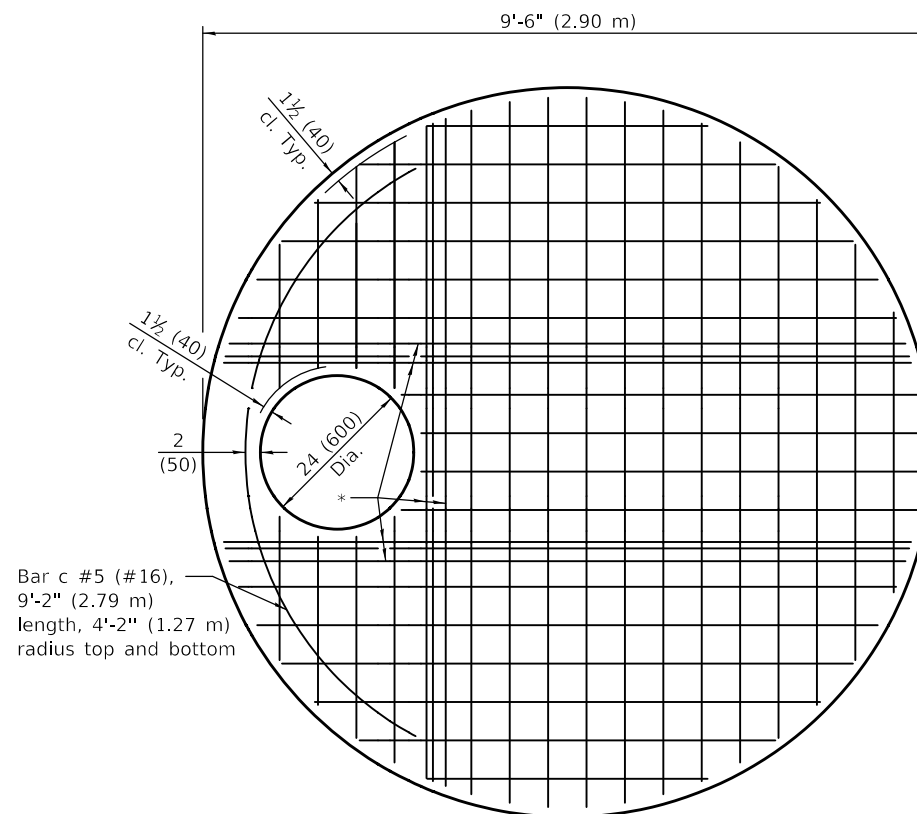


(Showing layout of bottom reinforcement bars and c bars)



(Showing layout of Welded Wire Reinforcement and c bars)

WWR not permitted for riser heights > 10' (3.05 m).



(Showing layout of Welded Wire Reinforcement and c bars)

WWR not permitted for riser heights > 10' (3.05 m).

\* #6 (#19) bars bottom. Bundle first bar with closest WWR bar to the opening and place second bar  $\pm 3$  (75) away.

## PRECAST MANHOLE TYPE A 8' (2.44 m) DIAMETER

(Sheet 2 of 3)

STANDARD 602416-08

